



Staff Report

CITY OF SAN BRUNO

DATE: February 7, 2007

TO: Traffic Safety and Parking Committee

FROM: Frans Lind, Principal Civil Engineer

SUBJECT: Item 5A - Consideration of Request by Neighbors and ACORN to Install a Traffic Signal at the Intersection of San Bruno Avenue and Sixth Avenue

BACKGROUND:

Pursuant to section 7.08.040.E.3 of the San Bruno Municipal code, the Transportation Safety and Parking Committee (TSPC) makes recommendations to the City Council regarding intersections where vehicles should be required to stop at one or more entrances, and the City Council has the ability to approve, modify, or deny any such TSPC recommendation.

Staff received a request dated October 10 from neighborhood residents near the intersection of San Bruno Avenue and Sixth Avenue and Acorn requesting that the City consider installing a traffic signal for traffic and pedestrian crossing safety at this intersection. A number of pedestrian safety concerns of the petitioners about the subject intersection were addressed:

1. The pedestrian crosswalks over San Bruno Avenue connect the northwest part of the City with the downtown district and commercial area and schools;
2. There is high pedestrian volume crossing San Bruno Avenue, including children;
3. There have been several past accidents at this intersection.

DISCUSSION:

Staff response to the request is as follows:

The results of the manual traffic counts and the warrant process do not support a traffic signal at San Bruno Avenue and Sixth Avenue, further described as follows:

The intersection of San Bruno Avenue at Sixth was evaluated to determine if a signal control would be warranted and benefit traffic operations and safety at the intersection. A warrant is a specific process for evaluating data and facts to determine whether or not an expensive traffic signal should be installed. This process would determine whether or not the proposed signal would correct certain problems and would do so without creating new problems, such as rear end accidents or impede traffic flow.

Warrants

The *Manual of Uniform Traffic Control Devices (MUTCD) for Streets and Highways* (Federal Highway Administration, 2003) contain guidance and warrants for the placement of signal control applications. It contains a total of eight warrants for traffic control signals as follows:

- Warrant 1: Eight Hour Vehicular Volume
- Warrant 2: Four Hour Vehicular Volume
- Warrant 3: Peak Hour
- Warrant 4: Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience
- Warrant 8: Roadway Network

The MUTCD also states that:

- The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.
- A traffic control signal should not be installed unless one or more of the warrants are met.
- A traffic control signal should not be installed unless an engineering study indicates that installing a traffic signal will improve the overall safety and/or operation of the intersection.
- A traffic control signal should not be installed if it will seriously disrupt progressive traffic flow.

To determine whether or not the warrants, justifying the signal were met, City staff over several hours, manually counted all traffic passing through the intersection; including school and non-school pedestrian. Observations of traffic and pedestrian activity were made during the counting. The following explains how the recommendation against signal installation was determined.

The counts were processed according to each of the eight warrants and compared to the minimums of each warrant required to justify the traffic signal.

The first seven of the eight warrants were not met for several reasons, while the eighth warrant did not apply:

Warrant Analysis

Count data collected by staff as part of this study, historical accident data and speed data were used to determine which signal warrants were met for the study intersection. The Eight Hour Vehicular Volume (Warrant 1), Four Hour Vehicular Volume (Warrant 2), and Peak Hour (Warrant 3) signal warrants are met (Exhibit 6).

Warrant	Met?	Details
1. Eight Hour Vehicular Volume	No	Minimum vehicle volumes (Condition A) not met for minor leg, Sixth Avenue for all times. Interruption of Continuous Traffic (Condition B)

		not met at any time.
2. Four Hour Vehicular Volume	No	Minimum vehicular volume met for the following hours: 3p.m. – 7 p.m.
3. Peak Hour	No	Peak hour delay (Part A) met. Peak hour volume (Part B) met.
4. Pedestrian Volume	No	Pedestrian count data collected for only 4 hours (7-9 a.m., 4-6 p.m.). These counts were much lower than the minimum threshold. Number of available gaps per hour were about one per minute average up to 4 p.m. For 4 p.m. to 6 p.m. average gaps decreased to zero at times.
5. School Crossing	No	Insufficient number of students.
6. Coordinated Signal System	No	Distance is less than 1,000 feet to Third Avenue signal and SR 101 signal.
7. Crash Experience	No	Number of crashes within a 12 month period susceptible to correction is less than 5 crashes for 2006. Minimum volumes met on major leg, San Bruno Avenue but no on minor Sixth Avenue. However, the adequate trial of less restrictive remedies failing to reduce accident frequency has not occurred.
8. Roadway Network	Not Applicable	Sixth Avenue is not a major route, while two or more major streets are required for this warrant to be met.

The Crash Experience (Warrant 7) warrant was not met only due to not having an adequate trial of less restrictive remedies failing to reduce accident frequency. There are sufficient traffic volumes only on San Bruno Avenue; not on Sixth Avenue. There are barely a sufficient number of crashes susceptible to correction to satisfy those portions of this warrant.

The heaviest traffic volumes were recorded after 4 p.m. during the weekday counts. After 5 p.m., traffic was heavy in both directions, causing difficulty to cross or turn left onto San Bruno Avenue from either of the two Sixth Avenue approaches. There were few gaps in San Bruno Avenue traffic after 4 p.m. that allowed these turns during hours previous to 4 pm were. These gaps, when they occur, also allow pedestrians to cross San Bruno Avenue.

Between 5 and 6 p.m. left turning San Bruno Avenue traffic; without benefit of left turn pockets, backed up several vehicles behind them while waiting to turn left in the number one lane of the tow lanes in the particular travel direction. Sideswipe type accidents could occur when backed up through traffic-changed lanes to go around the left turning vehicle.

The results of the counts and warrant process demonstrate that none of the eight warrants were satisfied and therefore, the signal at this location could not be justified. This is according to MUTCD warrant criteria.

Any of the warrants, if satisfied, could have justified a traffic signal. That is provided a subsequent engineering study found that no measures could be taken to mitigate a particular problem. This problem would be one that satisfied the warrant, favoring a traffic signal. An example of such a measure could be limiting through signage, turning movement during certain busy period in which a high number and type of accidents were occurring.

Though a traffic signal is not warrant under the MUTCD, there are several measures that can be implemented at the intersection to provide traffic and pedestrian safety as follows:

1. Repaint all four faded crosswalks or remove one crosswalk over San Bruno Avenue and repaint the three remaining crosswalks in the ladder or European bar style;
 2. Install an in-pavement, flashing light or beacon pedestrian crossing system;
 3. Install stop for pedestrian paddle sign on the San Bruno Avenue centerline approaches to the intersection;
 4. Prohibit turns at certain hours;
 5. Prohibit crossing or turns from Sixth Avenue onto San Bruno Avenue during certain congested traffic periods and sending these to the Third Avenue signal for improved safety;
 6. Improve lighting of the intersection and crosswalks;
 7. Developing a safety-to-school route from the neighborhood north of San Bruno Avenue to walk to the Belle Air School via the Third Avenue signal and crossing guard.
 8. Encourage speed and law enforcement by Police. During the count taking, significant speeding was observed over the new 25 MPH speed limit.
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1. Sixth Avenue combines with several neighboring streets, parallel with it, to connect the north side of the City with the Downtown district. These streets also cross San Bruno Avenue with crosswalks and without signage or signals, except the signalized Third Avenue at San Bruno Avenue.
 2. Police records show no pedestrian versus vehicle accidents for the year 2006 at this intersection.
 3. Sections of the four crosswalks in the intersection have crosswalk stripes over both San Bruno Avenue and Sixth Avenue that are missing or are faded.
 4. Sixth Avenue is narrow, approximately 30 feet wide, and therefore the pedestrian crossing length is short.
 5. No parking is permitted on San Bruno Avenue
 6. A streetlight exists near the southeasterly corner of the intersection. This light illuminates the easterly crosswalk over San Bruno Avenue.
 7. The street intersection is at 90° and almost level with mutually clear view by pedestrian and approaching motorists alike. Red curbs exist at the Sixth Avenue approaches to the intersection that keeps parked cars on Sixth Avenue back from the intersection. This provides mutual, car-pedestrian clear view.
 8. The speed limit on San Bruno Avenue was reduced from 30 mph to 25 mph last June.

STAFF RECOMMENDATION:

Staff recommends against a traffic signal installation at the San Bruno Avenue at Sixth Avenue intersection based upon the counts and the warrant procedure according to the MUTCD.

DATE PREPARED:

January 30, 2007

ATTACHMENTS: None